

## ABSTRACT OF THE DISCLOSURE

A process is provided for the production of hydrogen sulphide from the bacterial reduction of a mixture of a liquid and elemental sulfur with an electron donor, such as hydrogen gas, carbon monoxide or organic compounds. The bacteria may be *Desulforomonas* sp. (mesophilic), *Desulfotomaculum* KT7 (thermophilic), etc. The liquid/sulfur mixture is at a pH ranging from 5 to 9, and the liquid/sulfur mixture contacts the bacteria at a hydraulic retention time of at least 1 day. The hydrogen sulphide is stripped from the liquid medium to produce a gas containing at least 1 volume percent hydrogen sulphide.